

CLAIMS

What is claimed is:

1. An apparatus comprising:
 - (a) a holder adapted to secure a cast metal part; and
 - (b) a cleaner dispersing system operable to remove residual casting material from the cast metal part;
wherein the casting material is made using a disintegration additive.
2. An apparatus according to Claim 1, wherein said cleaner dispersing system comprises at least one spray head.
3. An apparatus according to Claim 2, wherein said cleaner dispersing system additionally comprises a fluid recirculator operable to collect and recycle cleaning fluid.
4. An apparatus according to Claim 1, wherein said cleaner dispersing system comprises a reservoir operable to immerse the metal part in cleaning fluid.
5. An apparatus according to Claim 4, wherein said cleaner dispersing system comprises a fluid circulator operable to circulate fluid within said reservoir.

6. An apparatus according to Claim 1, wherein said holder is suitable for holding an automotive drive train part.
7. An apparatus according to Claim 1, wherein said cleaner dispersing system is operable to contact the metal part with an electrolyte.
8. An apparatus according to Claim 7, further comprising a power source having a first electrode and a second electrode of opposite polarity.
9. An apparatus according to Claim 8, wherein said first electrode is adapted to contact the metal part.
10. An apparatus according to Claim 9, wherein said first electrode is a cathode.
11. An apparatus according to Claim 8, wherein said holder comprises said first electrode.
12. An apparatus according to Claim 7, wherein the disintegration additive enhances electron/ion conduction when the casting material is contacted with said electrolyte.

13. An apparatus according to Claim 1, wherein the disintegration additive volatilizes during the process of making the casting material.
14. An apparatus according to Claim 1, wherein said residual casting material comprises foundry sand and a binder.
15. An apparatus according to Claim 14, wherein said foundry sand comprises a material selected from the group consisting of synthetic sand, bank sand, silica sand, and mixtures thereof.
16. An apparatus according to Claim 14, wherein said binder comprises a material selected from the group consisting of phenolic urethane resin, clay, and mixtures thereof.
17. An apparatus comprising:
 - (a) a cast part, a surface of which is coated with residual casting material comprising a disintegration additive;
 - (b) a holder adapted to secure said cast part; and
 - (c) a fluid tank adapted to contain cleaning fluid for cleaning said cast part.

18. An apparatus according to Claim 17, further comprising:
 - (d) a fluid propulsion device connected to the fluid tank; and
 - (e) a spray device connected to the propulsion device and adapted to apply cleaning fluid on a surface of said cast part;
wherein the apparatus is operable to remove residual casting material from said metal part.
19. An apparatus according to Claim 18, comprising a plurality of said spray devices.
20. An apparatus according to Claim 18, additionally comprising a fluid recirculator operable to collect and recycle said cleaning fluid.
21. An apparatus according to Claim 18, wherein said part is an automotive drive train part.
22. An apparatus according to Claim 18, wherein said cleaning fluid comprises an electrolyte.
23. An apparatus according to Claim 18, additionally comprising a power source having a first electrode and a second electrode of opposite polarity.

24. An apparatus according to Claim 23, wherein said first electrode is configured so as to contact said metal part.
25. An apparatus according to Claim 23, wherein said first electrode is a cathode.
26. An apparatus according to Claim 23, wherein said holder comprises said first electrode.
27. An apparatus according to Claim 22, wherein said disintegration additive enhances electron/ion conduction when said casting material is contacted with said electrolyte.
28. An apparatus according to Claim 18, wherein said disintegration additive volatilizes during a process of making said metal part.
29. An apparatus according to Claim 18, wherein said residual casting material comprises foundry sand and a binder.
30. An apparatus according to Claim 29, wherein said foundry sand comprises a material selected from the group consisting of synthetic sand, bank sand, silica sand, and mixtures thereof.

31. An apparatus according to Claim 29, wherein said binder comprises a material selected from the group consisting of: phenolic urethane resin, clay, and mixtures thereof.
32. A system for the production of a clean industrial part, comprising:
 - (a) a casting material suitable for casting a part, comprising (i) foundry sand, (ii) binder, and (iii) a disintegration additive wherein a portion of said casting material remains on said part after casting;
 - (b) a parts washer operable to contact said cast part with cleaning fluid.
33. A system according to Claim 32, wherein said parts washer comprises one or more spray devices operable to apply said cleaning fluid on a surface of said cast part.
34. A system according to Claim 32, wherein said parts washer comprises a fluid recirculator operable to collect and recycle said cleaning fluid.
35. A system according to Claim 32, wherein said parts washer comprises a reservoir operable to immerse said cast part in said cleaning fluid.
36. A system according to Claim 35, wherein said parts washer additionally comprises a fluid circulator operable to circulate fluid within said reservoir.

37. A system according to Claim 32, wherein said parts washer comprises a holder operable to hold an automotive drive train part.
38. A system according to Claim 32, wherein said cleaning fluid comprises an electrolyte.
39. A system according to Claim 38, wherein said parts washer comprises a power source having a first electrode and a second electrode of opposite polarity.
40. A system according to Claim 39, wherein said first electrode is configured so as to contact said cast part which is electrically conductive.
41. A system according to Claim 39, wherein said first electrode is a cathode.
42. A system according to Claim 39, wherein said parts washer comprises a holder for said cast part, and said holder comprises said first electrode.
43. A system according to Claim 38, wherein said disintegration additive enhances electron/ion conduction when said casting material is contacted with said electrolyte.

44. A system according to Claim 32, wherein said disintegration additive volatilizes from said casting material during the process of making said cast part.
45. A system according to Claim 32, wherein said foundry sand comprises a material selected from the group consisting of: synthetic sand, bank sand, silica sand, and mixtures thereof.
46. A system according to Claim 32, wherein said binder comprises a material selected from the group consisting of: phenolic urethane resin, clay, and mixtures thereof.
47. A method for making a clean metal part, comprising:
 - (a) casting a metal part using a mold formed using a casting material comprising (i) foundry sand, (ii) binder, and (iii) a disintegration additive;
 - (b) cleaning said cast metal parts using a parts washer comprising a cleaner dispensing system.
48. A method for making a clean metal part according to Claim 47, wherein said parts washer comprises at least one spray device operable to apply cleaning fluid on a surface of said cast metal part.

49. A method for making a clean metal part according to Claim 48, wherein said parts washer additionally comprises a fluid recirculator operable to collect and recycle said cleaning fluid.
50. A method for making a clean metal part according to Claim 47, wherein said fluid dispersion system comprises a reservoir operable to immerse said metal part in cleaning fluid.
51. A method for making a clean metal part according to Claim 50, wherein said fluid dispersion system comprises a fluid circulator operable to circulate said cleaning fluid within said reservoir.
52. A method for making a clean metal part according to Claim 47, wherein said parts washer comprises a holder suitable for holding an automotive drive train part.
53. A method for making a clean metal part according to Claim 47, wherein said parts washer is operable to contact said metal part with cleaning fluid comprising an electrolyte.
54. A method for making a clean metal part according to Claim 53, wherein said parts washer comprises a power source having a first electrode and a second electrode of opposite polarity.

55. A method for making a clean metal part according to Claim 54, wherein said first electrode is configured so as to contact said cast metal part.
56. A method for making a clean metal part according to Claim 54, wherein said first electrode is a cathode.
57. A method for making a clean metal part according to Claim 54, wherein said parts washer comprises a part holder comprising said first electrode.
58. A method for making a clean metal part according to Claim 47, wherein said disintegration additive promotes disintegration of said foundry cast material from said cast metal part.
59. A method for making a clean metal part according to Claim 53, wherein said disintegration additive enhances electron/ion conduction when said foundry casting material is contacted with said electrolyte.
60. A method for making a clean metal part according to Claim 47, wherein said disintegration additive volatilizes during the process of making a cast with said foundry casting material.

61. A method for making a clean metal part according to Claim 47, wherein said foundry sand comprises a material selected from the group consisting of synthetic sand, bank sand, silica sand, and mixtures thereof.
62. A method for making a clean metal part according to Claim 47, wherein said binder comprises a material selected from the group consisting of phenolic urethane resin, clay, and mixtures thereof.
63. A method for making a clean metal part according to Claim 47, wherein said cleaning step further comprises:
 - (i) physically separating said cast metal part from said mold, to expose a metal part, wherein residual mold material remains on a surface of said metal part;
 - (ii) attaching said metal part to a power source having a first and a second electrode of opposite polarities, wherein said first electrode contacts said metal part;
 - (iii) contacting said metal part with an electrolyte, wherein said electrolyte is in contact with said second electrode; and
 - (iv) generating current through said electrolyte, from said first electrode to said second electrode.
64. A method for making a clean metal part according to Claim 63, wherein said first electrode is a cathode.

65. A method for making a clean metal part according to Claim 63, wherein said contacting is by immersing said metal part in a reservoir of said electrolyte.
66. A method for making a clean part according to Claim 63, wherein said contacting is by spraying said electrolyte on a surface of said metal part.